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V. IRON TUBE HOT-BLAST OR AIR HEATERS

This type of apparatus is now practically unknown, except for the description of it which may be found in various books.

In the *Manual of Metallurgy,* by Percy-Wedding, twelve types of iron tube air heaters are described, some dozen or so of pages being devoted to their construction and the causes which led to their being abandoned. Of the many types of this apparatus, the only ones which have survived are those of the *Besseges* works and the Cleveland type; all of the others have passed out of use.

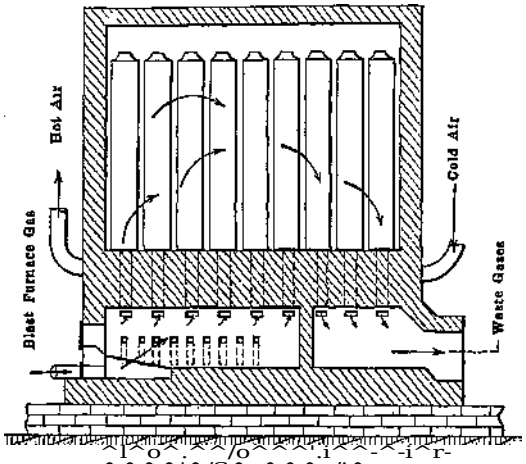

FIG. 76.

The reason for their abandonment is very simple: all of the iron tube air heaters described by Percy-Wedding had the outlet for the waste gases at their highest point. The hottest gases of combustion rose immediately to the top of the chamber, licking the surface of the iron tubes, and heating them irregularly, the top being much hotter than the bottom. The tubes, heated in this manner, burned out, warped and broke.

In the *Besseges* type of air heater the products of combustion pass from chamber to chamber through ports in the division walls. These ports are located at the level of the

hearth. In this apparatus the reacting portion of the flaming gases rise and then drop through zones of uniform heating, where combustion is completed.